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Strength Training and Range of Motion

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When lifting weights, each rep should be done throughout the greatest possible range of motion (ROM) that safety allows; from a full stretch to a full contraction and back to a full stretch. But walk into most gyms and fitness centers and you'll see partial reps (aka half reps) being done on a wide variety of exercises. Classic examples include not lowering the bar all the way to the chest when doing bench presses and not fully straightening the arms when doing chin-ups, pull-ups and bicep curls.

Performing reps throughout a full ROM promotes greater increases in your muscular size and strength. In one study, 40 men were randomly assigned to three groups: One group did the bicep curl with a full ROM (0 to 130 degrees), another group did the bicep curl with a partial ROM (50 to 100 degrees) and the third group acted as a control and did no training. The subjects in the two experimental groups did two to four sets of the bicep curl two days per week for 10 weeks. The improvements in muscular strength(25.7% compared to 16.0%) than the group that used a partial ROM. The group that used a full ROM also had greater increases in muscle thickness (9.65% compared to 7.83%) than the group that used a partial ROM but the difference wasn't enough to reach statistical significance.

Look at it this way: Exercising throughout a full ROM ensures that your entire muscle is stimulated—not just a portion of it—thereby making the reps more productive. The fact of the matter is that strength training is very angular-specific. What this means is that full-range reps are needed to produce full-range effects.

Besides promoting greater increases in your muscular size and strength, performing reps throughout a full ROM allows you to maintain—or perhaps improve—your flexibility. And get this: Stretching the muscles while strength training can be just as effective as stretching the muscles while doing traditional flexibility training. In one study, 25 exercise science majors at the University of North Dakota were randomly assigned to three groups: One group did strength training, another group did flexibility training and the third group acted as a control and did no training. The subjects in the two experimental groups did their assigned activity—either strength training or flexibility training—for the same muscles and joints. After five weeks, both groups significantly increased their ROM in three of four measures of flexibility and there were no significant differences between the groups. (The two groups made a small but non-significant improvement in the fourth measure of flexibility.) Something else to consider is that if you do partial reps on a regular basis, you'll begin to lose flexibility in your joints.

This doesn't imply that you should avoid partial reps altogether. During rehabilitative training, for example, you can do reps throughout a pain-free (partial) ROM and still manage to stimulate some gains in muscular size and strength. However, full-range reps are more productive and should be performed whenever possible.

Bottom line: In general, a full ROM is better than a partial ROM for increasing your muscular size and strength and maintaining or improving your flexibility.

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